Ohio

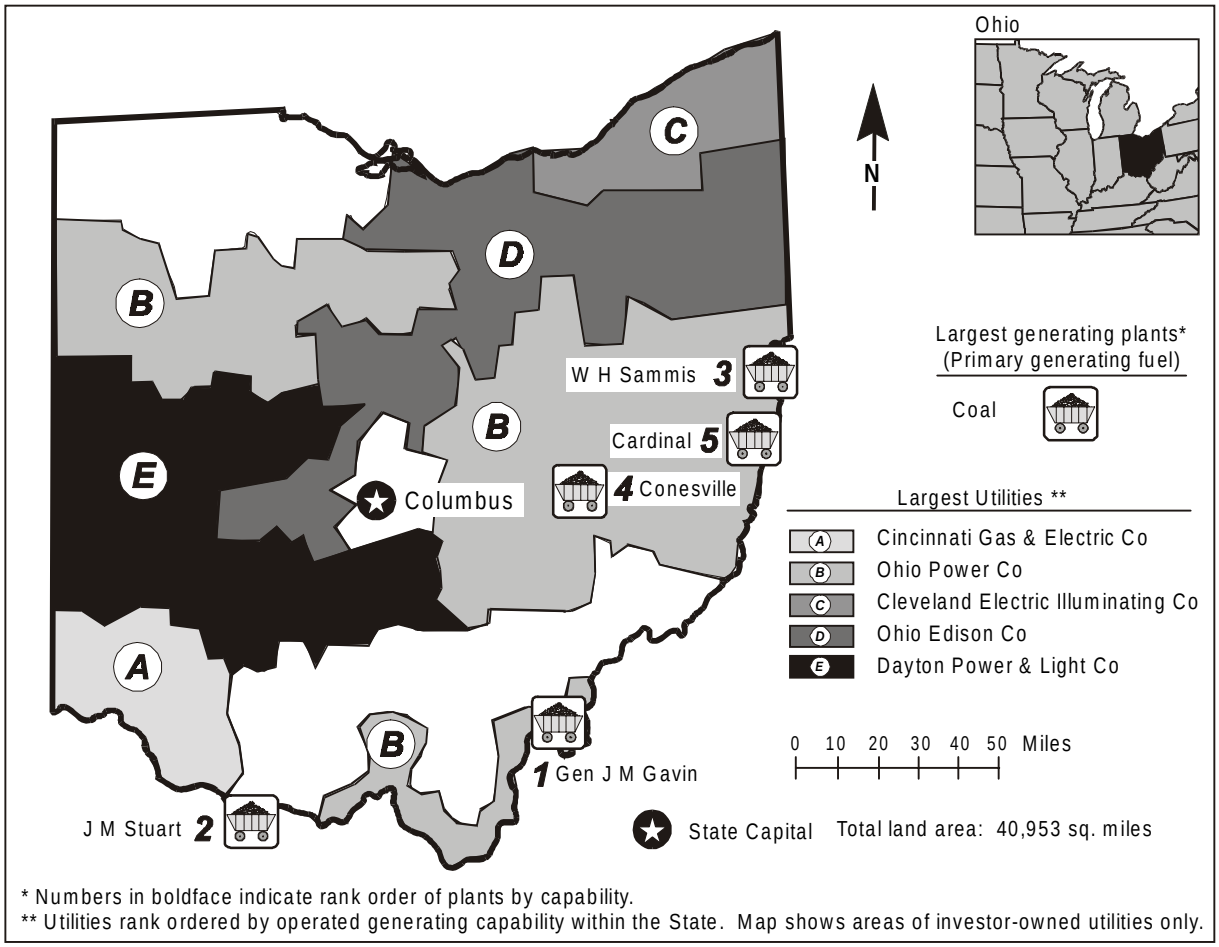
Ohio had both the seventh largest population and utility generating capability, the latter of which is almost entirely fired by coal. All five of Ohio's largest plants are coal-fired. Four of the five lie along the Ohio River, including General J. M. Gavin, the largest. The State has no hydroelectric power capability, but does rely to a small degree on two nuclear power plants, Davis-Besse and Perry. The largest utility in the State in 1996 was the Cincinnati Gas and Electric Company. A significant amount of industry operates in the State and is reflected in the fact that over 46 percent of retail sales in Ohio goes to the industrial sector. During the period 1986 to 1996, the nonutility share of generation in Ohio remained stable at just over 1.0 percent of the State total. The average revenue for electric utilities in Ohio was 6.30 cents per kilowatthour, below the national average of 6.86 cents, but above the median price of 6.16 cents per kilowatthour (the price in Texas).

Coal is the most important mineral commodity in Ohio. Of the coal originating in Ohio in 1996, 79 percent was delivered to electric utilities within the State.[1] The coal reserves of Ohio are part of the Appalachian coal basin and consist entirely of high-sulfur bituminous coal.[2] That would certainly account for the fact that Ohio generators led the Nation in emissions of sulfur dioxide (SO_2) in 1996, accounting for more than 10 percent of the Nation's total SO_2 emissions. It also is the reason that 14,252 megawatts of nameplate capacity at 15 Ohio plants were targeted by the Clean Air Act Amendments of 1990 (CAAA90) to begin compliance with stricter emissions standards for SO_2 and nitrogen oxides (NO_x). No other State in the Nation had more nameplate capacity specified by the CAAA90. Emissions of both NO_x and carbon dioxide (CO_2) from Ohio generators ranked third in the Nation. While emissions of SO_2 in 1996 fell below the level seen in 1986, due mainly to CAAA90, NO_x and CO_2 emissions increased slightly during the same time period. It is likely that Ohio will need to design a State implementation plan for reducing ground-level ozone in response to a proposal released by the U.S. Environmental Protection Agency (EPA) in October 1998. The EPA proposal does not mandate which sources must reduce pollution. However, EPA states that utilities would be one of the most likely sources of NO_x emissions reductions.

Although a restructuring study of Ohio's $11 billion electricity industry was begun in early 1996, little progress has been made toward reaching a consensus plan. In March 1998, restructuring legislation was introduced (two identical bills introduced to each chamber) which would allow full retail competition beginning in 2000 and would set a five-year transition to full competition by December 2004. However, State education groups said the bills, which would also change Ohio's property tax code so that utilities would pay the same tax rate as other businesses, would cost school districts $282 million in revenues. A study which was conducted to look into the tax matter found that replacing the existing property tax structure with a kilowatthour tax on distribution, while revenue-neutral on the bottom line, would shift tax streams away from local school districts, forcing them to pass tax levies or cut services. In August of 1998, in response to a request by the general assembly, the State's four major investor-owned utilities proposed a plan that calls for deregulation to start January 1, 2001, but freezes rates during a five-year transition period. Although most parties concerned with restructuring are eager to see legislation passed, the electricity deregulation bills introduced in 1998 were not acted upon. They will have to be reintroduced into the 1999 State assembly. Parties are optimistic that differences can be ironed out and that significant progress will be made early in the session.[3]

1.Energy Information Administration, *Coal Distribution Report January-December 1996*, DOE/EIA-0125(96/4Q) (Washington, DC), Table 34.
2.Energy Information Administration, *State Coal Profiles*, DOE/EIA-0576 (Washington, DC, January 1994), p. 71.

3.Energy Information Administration, Status of State Electric Utility Deregulation Activity, http://www.eia.doe.gov/cneaf/electricity/
ch_str/tab5rev.html.



* Numbers in boldface indicate rank order of plants by capability.
** Utilities rank ordered by operated generating capability within the State. Map shows areas of investor-owned utilities only.

Table 1. 1996 Summary Statistics

Item	Value	U.S. Rank
NERC Region(s)		ECAR
Net Exporter or Importer		Importer
State Primary Generating Fuel		Coal
Population (as of 7/96)	11,162,797	7
Average Revenue (cents/kWh)	6.30	[a]28
Industry		
Capability (MWe)	27,613	[b]7
Generation (MWh)	144,431,762	[b]6
Capability/person (KWe/person)	2.47	[b]31
Generation/person (MWh/person)	12.94	[b]22
Sulfur Dioxide Emissions (Thousand Short Tons)	1,434	1
Nitrogen Oxide Emissions (Thousand Short Tons)	562	3
Carbon Dioxide Emissions (Thousand Short Tons)	140,467	3
Sulfur Dioxide/sq. mile (Tons)	35.01	1
Nitrogen Oxides/sq. mile (Tons)	13.73	3
Carbon Dioxide/sq. mile (Tons)	3,429.95	6

Item	Value	U.S. Rank
Utility		
Capability (MWe)	27,278	7
Generation (MWh)	142,900,353	5
Average Age of Coal Plants	28 years	
Average Age of Oil-fired Plants	24 years	
Average Age of Gas-fired Plants	17 years	
Average Age of Nuclear Plants	13 years	
Average Age of Hydroelectric Plants	14 years	
Average Age of Other Plants	13 years	
Nonutility[c]		
Capability (MWe)	335	34
Percentage Share of Capability	1.2	41
Generation (MWh)	1,531,409	34
Percentage Share of Generation	1.1	41

Table 2. Five Largest Utility Plants, 1996

Plant Name	Type	Operating Utility	Net Capability (MWe)
1. Gen J M Gavin	Coal	Ohio Power Co	2,600
2. J M Stuart	Coal	Dayton Power & Light Co	2,340
3. W H Sammis	Coal	Ohio Edison Co	2,233
4. Conesville	Coal	Columbus Southern Power Co	1,925
5. Cardinal	Coal	Cardinal Operating Co	1,800

Table 3. Top Five Utilities with Largest Generating Capability, and Type, Within the State, 1996
(Megawatts Electric)

Utility	Net Summer Capability	Net Coal Capability	Net Oil Capability	Net Gas Capability	Net Nuclear Capability	Net Hydro/Other Capability
A. Cincinnati Gas & Electric Co	4,598	3,661	369	568	--	--
B. Ohio Power Co	4,006	3,965	--	--	--	41
C. Cleveland Electric Illum Co	3,889	2,668	52	--	1,169	--
D. Ohio Edison Co	3,626	3,197	235	194	--	--
E. Dayton Power & Light Co	3,564	3,305	61	198	--	--
Total	19,683	16,796	717	960	1,169	41
Percentage of Industry Capability	71.3	--	--	--	--	--

-- = Not applicable.

Figure 1. Utility Generating Capability by Primary Energy Source, 1996

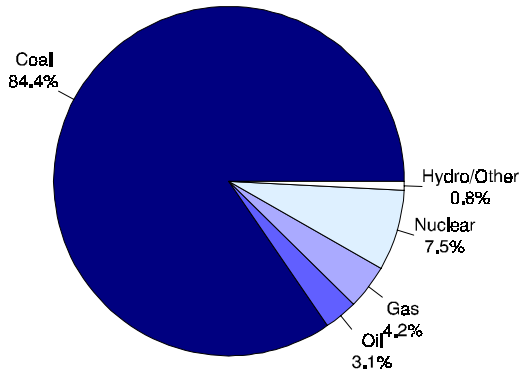


Figure 2. Utility Generation by Primary Energy Source, 1996

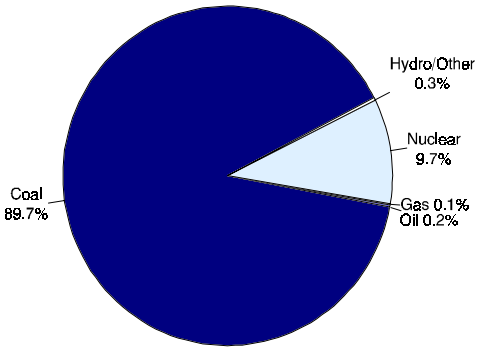


Figure 3. Energy Consumed at Electric Utilities by Primary Energy Source, 1996

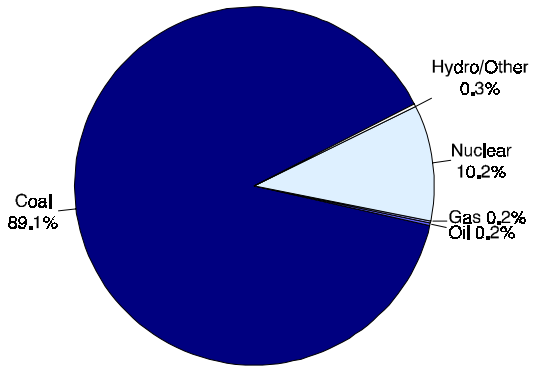


Table 4. Electric Power Industry Generating Capability by Primary Energy Source, 1986, 1991, and 1996
(Megawatts Electric)

Fuel	1986	1991	1996	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Coal	22,769	23,421	23,033	85.3	85.0	84.4
Oil	1,218	1,084	856	4.6	3.9	3.1
Gas	463	777	1,140	1.7	2.8	4.2
Nuclear	2,049	2,042	2,042	7.7	7.4	7.5
Hydro/Other	210	215	207	0.8	0.8	0.8
Total Utility	26,708	27,540	27,278	100.0	100.0	100.0
Total Nonutility	W	327	335	--	--	--

-- = Not applicable. W = Withheld.

Table 5. Electric Power Industry Generation of Electricity by Primary Energy Source, 1986, 1991, and 1996
(Thousand Kilowatthours)

Fuel	1986	1991	1996	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Coal	110,718,869	116,813,173	128,125,332	99.3	88.0	89.7
Oil	274,970	369,361	267,240	0.2	0.3	0.2
Gas	37,422	234,956	195,917	(s)	0.2	0.1
Nuclear	24,050	14,832,789	13,919,390	(s)	11.2	9.7
Hydro/Other	451,241	443,427	392,474	0.4	0.3	0.3
Total Utility	111,506,551	132,693,706	142,900,353	100.0	100.0	100.0
Total Nonutility	W	1,333,950	1,531,409	--	--	--

-- = Not applicable. (s) = Nonzero percentage less than 0.05. W = Withheld.

Table 6. Electric Power Industry Consumption by Primary Energy Source, 1986, 1991, and 1996
(Quadrillion Btu)

Fuel	1986	1991	1996	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Coal	1.137	1.185	1.289	99.2	87.3	89.1
Oil	0.003	0.004	0.003	0.3	0.3	0.2
Gas	0.001	0.003	0.003	0.1	0.2	0.2
Nuclear	(s)	0.159	0.148	--	11.7	10.2
Hydro/Other	0.005	0.005	0.004	0.4	0.3	0.3
Total Utility	1.146	1.356	1.448	100.0	100.0	100.0
Total Nonutility	W	0.057	0.092	--	--	--

-- = Not applicable. (s) = Nonzero value less than 0.0005. W = Withheld.

Figure 4. Utility Generation of Electricity by Primary Energy Source, 1986-1996

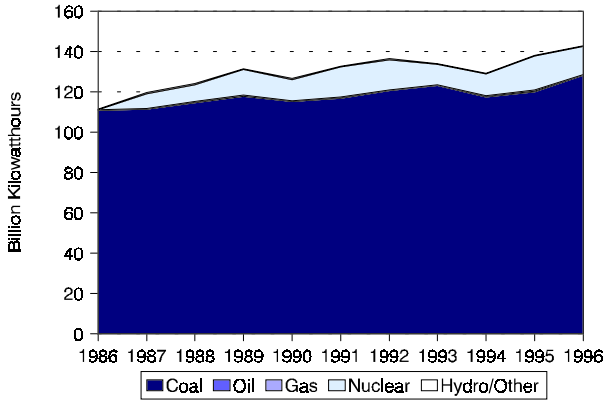


Figure 5. Utility Delivered Fuel Prices for Coal, Oil, and Gas, 1986-1996
(1996 Dollars)

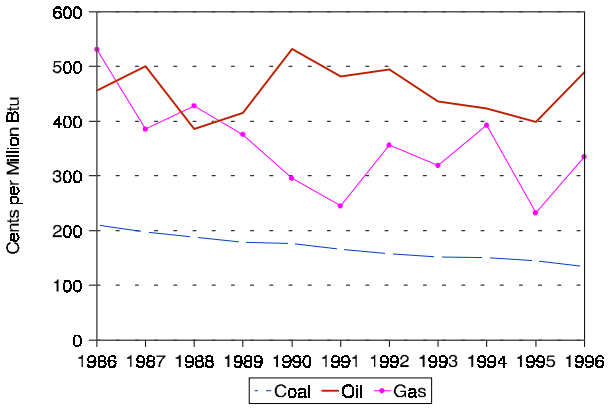


Table 7. Utility Delivered Fuel Prices for Coal, Oil, and Gas, 1986, 1991, and 1996
(Cents per Million Btu, 1996 Dollars)

Fuel	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)
Coal	210.3	166.2	134.0	-4.4
Oil	455.7	481.8	489.6	0.7
Gas	602.7	244.9	335.0	-5.7

Table 8. Electric Power Industry Emissions Estimates, 1986, 1991, and 1996
(Thousand Short Tons)

Emission Type	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)
Sulfur Dioxide	2,195	2,230	1,434	-4.2
Nitrogen Oxides[d] . .	529	548	562	0.6
Carbon Dioxide[d] . . .	115,877	127,460	140,467	1.9

Figure 6. Estimated Sulfur Dioxide Emissions, 1986-1996

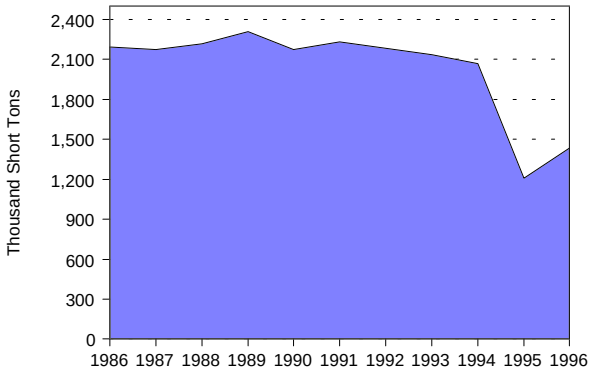


Figure 7. Estimated Nitrogen Oxide Emissions, 1986-1996

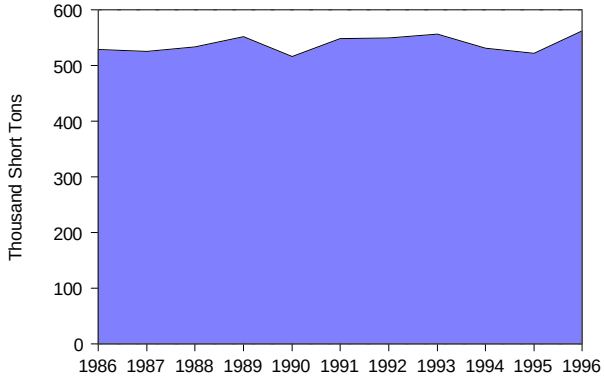


Figure 8. Estimated Carbon Dioxide Emissions, 1986-1996

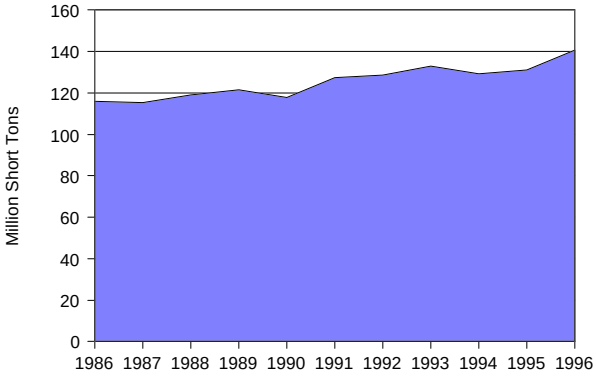


Table 9. Utility Retail Sales by Sector, 1986, 1991, and 1996
(Megawatthours)

Sector	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Residential . .	35,220,291	40,942,449	44,573,250	2.4	28.3	28.1	28.1
Commercial	26,431,390	32,325,493	36,034,487	3.1	21.3	22.2	22.7
Industrial . . .	58,497,270	67,856,138	73,394,154	2.3	47.1	46.6	46.3
Other	4,089,888	4,534,240	4,585,446	1.2	3.3	3.1	2.9
Total	124,238,842	145,658,320	158,587,337	2.5	100.0	100.0	100.0

Figure 9. Nuclear Power Capacity Factor Comparison, 1986-1996

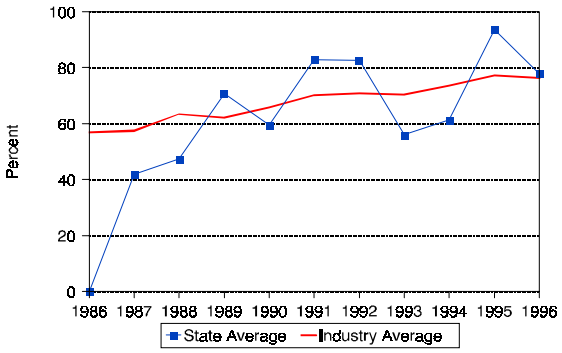


Table 10. Utility Retail Sales Statistics, 1986, 1991, and 1996

Item	Investor-Owned Utility	Public	Federal	Cooperative	Total
			1986		
Number of Utilities	9	84	--	28	121
Number of Retail Customers	3,965,117	282,671	--	241,380	4,489,168
Retail Sales (MWh)	115,425,205	5,148,627	--	3,665,010	124,238,842
Percentage of Retail Sales	92.9	4.1	--	3.0	100.0
Revenue from Retail Sales (thousand 1996 $)[e]	8,691,536	392,438	--	316,002	9,399,976
Percentage of Revenue	92.5	4.2	--	3.4	100.0
			1991		
Number of Utilities	9	84	--	28	121
Number of Retail Customers	4,190,190	301,905	--	268,625	4,760,720
Retail Sales (MWh)	134,307,359	6,802,912	--	4,548,049	145,658,320
Percentage of Retail Sales	92.2	4.7	--	3.1	100.0
Revenue from Retail Sales (thousand 1996 $)[e]	9,221,118	446,232	--	335,739	10,003,090
Percentage of Revenue	92.2	4.5	--	3.4	100.0
			1996		
Number of Utilities	9	85	--	27	121
Number of Retail Customers	4,378,303	339,797	--	308,761	5,026,861
Retail Sales (MWh)	144,033,900	8,959,683	--	5,593,754	158,587,337
Percentage of Retail Sales	90.8	5.7	--	3.5	100.0
Revenue from Retail Sales (thousand 1996 $)[e]	9,108,842	511,459	--	362,926	9,983,227
Percentage of Revenue	91.2	5.1	--	3.6	100.0

-- = Not applicable.